

AIR TOXICS MONITORING NEWSLETTER

A PUBLICATION OF THE STAPPA/ALAPCO/USEPA AIR TOXICS MONITORING STEERING COMMITTEE

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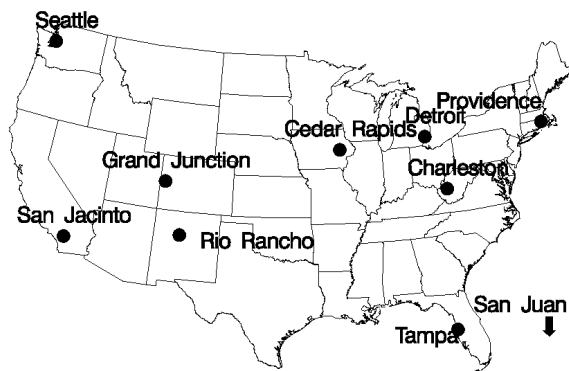
National Air Toxics Monitoring Program

Two major projects are underway as part of the first year of national air toxics monitoring:

1. Pilot monitoring programs in four urban areas and six small city/rural areas; and
2. Analysis of existing (and the new pilot project) air toxics monitoring data.

The U.S. Environmental Protection Agency (USEPA) provided \$3 million in FY2000 money for these two projects. The status of these projects is summarized below. (Note, USEPA will provide another \$3 million in FY2001 money to support the initial implementation of the national network. USEPA is currently soliciting proposals from state and local agencies on new monitoring projects. Further information on these projects will be provided in the next quarterly newsletter.)

Monitoring Pilot Project: The pilot project is intended to generate information on the spatial and temporal variability of ambient air toxics concentrations. Ten state/local agencies are participating in the project (see map below).



Map of Ten Cities in Monitoring Pilot Project

Monitoring began the first quarter of 2000 at the Tampa, Charleston, Cedar Rapids, Grand Junction, San Jacinto, and Seattle sites. The remaining sites are scheduled to begin in April. Both procurement and equipment issues have hampered the start date for most of the projects. All sites will provide at least 12 months of data. Sampling is being conducted on primarily a 1-in-6 day frequency in the four urban areas, and a 1-in-12 day frequency in the six small city/rural areas. Each area will sample for at least 18 "core" VOCs, carbonyls, and metals. The data will

be analyzed as part of the air toxics data analysis project.

Pilot city contacts continue their monthly conference calls to discuss issues and share information. In addition, they are participating in data management discussions with USEPA and the data analysts so that the data reported will be of consistent quality and quantity.

Air Toxics Data Analysis Project: The data analysis project is intended to "mine" the existing data to provide information about the spatial pattern, temporal profile, and general characteristics of air toxics compounds. The project is being performed by Battelle Memorial Institute and Sonoma Technology, Inc., under contract to LADCO.

Accomplishments to date include:

- Data archive: Prepared and distributed a summary report on contents of archive. Currently updating archive to include several new data sets.
- Web page: Prepared an initial draft web page with the contents of the data archive for internal review. Once available, users will be able to request tabular and graphical summaries of the data.

A number of statistical and graphical analyses are underway to address issues such as sampling frequency, spatial variability, temporal variability, emissions patterns, urbanicity, trace metal composition, compound comparisons, and minimum detection levels (MDLs). The preliminary findings include:

- In most cases, a site-specific annual average concentration (for VOCs, carbonyls, and metals) can be estimated with less than 10 percent relative error using every-third to every-sixth day sampling. A more frequent sampling schedule (i.e., every third-day) is recommended for higher concentration, source-oriented sites.
- Overall data variability at a given monitoring site over the course of a year is mostly driven by its temporal component. At low concentrations (i.e., < 0.5 ppbv), however, the temporal and other components of

variability dissipate and analytical variability takes over.

- Initial seasonality analyses show no strong patterns for most compounds studied.
- Examination of recent data from five sites in Portland, Oregon, which are considered a precursor of the pilot city data, demonstrate the influence of local point sources.

Upcoming milestones include an initial version of the web page in spring 2001 and a preliminary draft data analysis report and updated web-based system in summer 2001.

To supplement Battelle's data analysis work, ICF Consulting was hired to analyze air toxics modeling data. ICF will examine the spatial, seasonal, daily, and diurnal variability of air toxics concentrations (for benzene, 1,3-butadiene, tetrachlorethylene, formaldehyde, and lead) based on two modeling studies, including USEPA's recent ASPEN modeling performed as part of their National Air Toxics Assessment. ICF will provide recommendations on network design based on their analysis of the modeling data (and monitoring data) for Houston and two other cities (Baltimore and Minneapolis). In addition, ICF will address how states and locals can use the ASPEN modeling (in conjunction with other information) to help design air toxics monitoring networks.

Texas' Air Toxics Monitoring Program

As planning for the national air toxics monitoring network proceeds, several state/local agencies will continue to operate their own air toxics monitoring programs. The State of Texas' program is discussed here. (Other state/local programs will be discussed in future editions of the newsletter.)

Texas established a community air toxics monitoring network in late 1992. The original network began with 15 sites collecting 24-hour, every sixth-day canister samples. The sites were chosen based upon a ranking process that considered such information as the magnitude of pollution emissions within a 10-kilometer radius, prevailing winds, population density, degree of public concern, and traffic patterns in the vicinity. The canisters were analyzed for 19 VOCs at the Texas Natural Resource Conservation Commission's central laboratory using what is now TO-15. The VOCs were selected for monitoring based upon their potential to cause adverse health effects from long-term exposure to very low levels.

Today, the basic network has grown to a total of 47 canister sites and the number of compounds

analyzed has increased to 85, which also includes the PAMS precursor target compounds. At five of the sites along the Texas-Mexico border, additional samples are collected and analyzed for 17 PAHs; at one site each in El Paso, Houston, and Dallas additional samples are collected and analyzed for 17 carbonyls; and at two sites in Houston samples are collected and analyzed for 17 carbonyls and 18 metals.



Areas with Air Toxics Monitoring in Texas

As part of a new air toxics monitoring initiative, in 2001 Texas will start replacing existing network canister samplers with newer technology. In addition to being able to collect a 24-hour, every sixth-day sample, the new samplers will be able to collect multiple (up to 16) event-triggered samples ranging from 1-to-24 hours in sample duration. Sampling will be triggered when a collocated continuous monitor, such as a TNMHC or ozone monitor, exceeds a preset value, or by a command sent via the Internet. The samplers will not only replace the existing network samplers, but also be deployed near the fence line of facilities suspected of having excess emissions, a record of numerous upsets, or numerous complaints. At some sites, specially coated canisters will be utilized, and in addition to the routine VOC analysis, they will also be analyzed by a contract laboratory for reduced sulfur compounds.

For further information on the monitoring pilot project, please contact Sharon Nizich, USEPA, OAQPS, nizich.sharon@epamail.epa.gov, 919-541-2825. For further information on the data analysis project, please contact Michael Koerber, LADCO, koerber@ladco.org, 847-296-2181. This newsletter will be issued on a regular (quarterly) basis to provide status reports on air toxics monitoring activities.